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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/657,096 | 09/09/2003 | Bamdad Bahar | 0769-4624USS | 9845 |

7590 08/09/2007
MORGAN & FINNEGANT, L.L.P.
345 Park Avenue
New York, NY 10154

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| EXAMINER | |
| MARTIN, ANGELA J | |

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| ART UNIT | PAPER NUMBER |
| 1745 | |

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| 08/09/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|------------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/657,096 | BAHAR ET AL. | |
| | Examiner Angela J. Martin | Art Unit 1745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 May 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,3,5,6,8-10,12-15,17,18 and 20-26 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1, 3, 5, 6, 8-10, 12-15, 17, 18, 20-26 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

This Office Action is responsive to the Remarks filed on May 25, 2007. The rejection is made final for the following reasons of record.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, 5, 6, 8-10, 12-15, 17, 18, 20-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy et al., U.S. Pat. No. 6,059,943, in view of Koslow, U.S. Pat. No. 5,147,722.

Rejection of claims 3, 5, 6, 8-10, 12-15, 17, 18, 20-26 drawn to a polymeric membrane.

Murphy et al., teach a substantially air impermeable polymeric membrane comprising a polymeric sheet (col. 9, lines 34-36) comprising polymer and having a porous structure (col. 9, lines 9-12), the sheet having distributed in the polymer: inorganic particulate (col. 8, lines 47-51), metal (col. 8, lines 52-58), organic polymer (col. 8, lines 58-62), or a combination (col. 8, lines 47-62), and the porous structure is at least partially filled with an ion-exchange particles to provide ionic conductance (claim 1). It teaches the sheet has precious metal, or silica (col. 3, lines 1-9), or titania (claim

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4), or carbon (col. 13, lines 65-67 and col. 14, lines 1-3), or platinum distributed therein (col. 14, lines 1-3). It teaches the polymeric sheet is porous expanded PTFE (col. 12, lines 1-10). It teaches membrane is disposed between two fuel cell electrodes (col. 13, lines 64-67 and col. 14, lines 1-6). It teaches porous structure is filled with metal salts (col. 12, lines 42-55). It teaches the ion-exchange membrane is fluorinated (col. 8, lines 47-67 and col. 9, lines 1-8). It teaches the polymer has a cross-linked structure (Fig. 2 and 6).

Murphy et al., do not teach the polymeric sheet has silica or fumed silica distributed therein.

Koslows teaches a polymeric membrane comprising ion-exchange resin (col. 25, lines 15-35) wherein the polymeric sheet has silica or fumed silica distributed therein (col. 16, lines 65-67 and col. 17, lines 1-7).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Koslow into the teachings of Murphy et al., because Koslow teaches that the addition of fumed silica can alter the stiffness of the membrane and improve the strength of the structure. With respect to the sheet thickness and the porosity, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose an optimum thickness and porosity, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

3. Applicant's arguments filed 5/25/07 have been fully considered but they are not persuasive.

The Applicant argues that, "Murphy's manufacturing techniques are limited to two types of embodiments. [See generally Murphy, Col. 9, lines 12-33; see also Col. 11, line 63 - Col. 12, line 51]. In a first type of embodiment, the pores or voids of a porous polymer matrix are filled with proton conductor particles: ...In these embodiments, the proton conductor particles occupy the pores of the polymer matrix, and are not distributed in the polymer matrix itself. Murphy also does not disclose that other materials are distributed in the polymer matrix itself. Moreover, to the extent that the proton conductor particles fully occupy the pores of the polymer matrix, an additional ion-exchange resin cannot be placed into those same pores." However, Murphy's manufacturing techniques are irrelevant since the claims presented are product claims. In addition, once the proton conductor particles of Murphy contact the polymeric material, the surface acquires the same characteristic of conducting ions (proton exchange property). The combination of the conductor particles on the polymeric material has the capability of ion exchange property, at least at the interface area of contact. Additionally, it is unclear whether the ion exchange resin in the application has the property of ion exchange on its own, or whether the property is possible because of another particle (filler).

With respect to the secondary reference, Koslow, the Applicant argues that, "the alleged motivation, i.e., increasing stiffness, is contrary to the disclosure of Murphy which advocates the opposite, i.e., that the polymer matrix be flexible: ...Thus, the alleged motivation to add fumed silica to increase stiffness of the membrane contradicts the disclosure of Murphy." However, Koslow recites, "Certain additives, such as fumed silica, when added to the original powder/fiber formulation, have been shown to significantly alter the stiffness of the resulting product." The word "alter" is defined as "to make different; to modify;" thus, the addition of fumed silica to the membrane would change the stiffness, not necessarily increase the stiffness.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AJM


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER